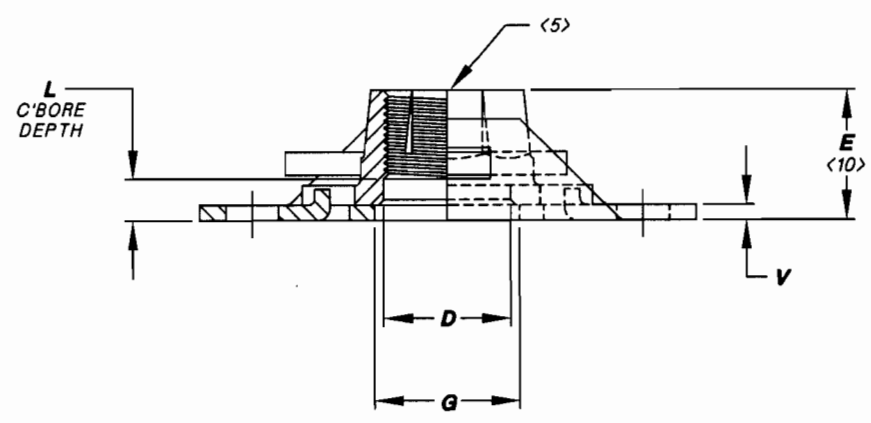
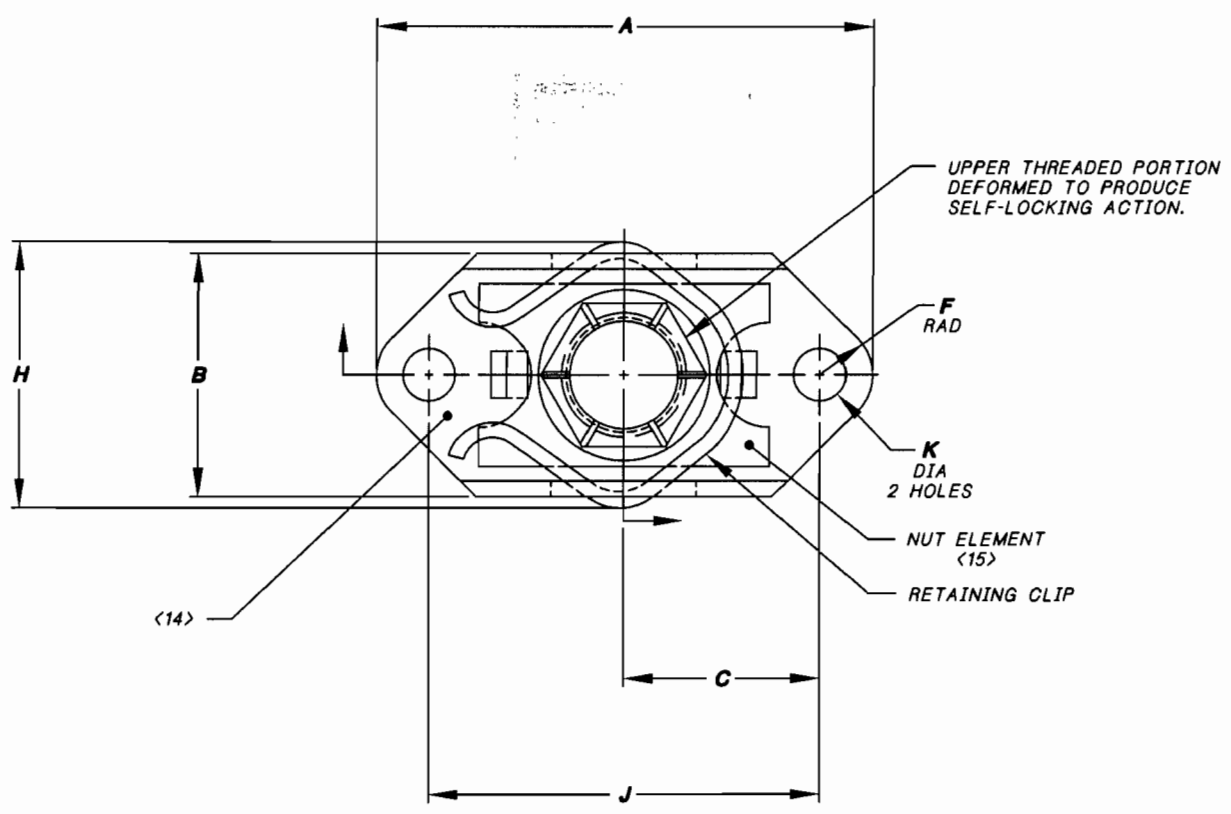


MANUFACTURE OF THE PROPRIETARY PARTS SHOWN HERE WITHOUT WRITTEN
CONSENT OF ALCOA FASTENING SYSTEMS IS ABSOLUTELY PROHIBITED.

THIS DRAWING EMBODIES A CONFIDENTIAL, PROPRIETARY DESIGN & ALL DESIGN, MANUFACTURING
PRODUCTION, USE & SALE RIGHTS REGARDING SAME ARE EXPRESSLY RESERVED.



INTERIM DOCUMENT REVISION		
Rev.	Date	DAF #
B1	10/21/10	44301

APPROVED DATE 17 JUL 89	CURRENT DESIGN ACTIVITY: Alcoa Fastening Systems VOI-SHAN PRODUCTS 3000 W. LOMITA BLVD. TORRANCE, CA 90505	TITLE: NUT PLATE FLAT BEAM LOCK, CLIP-IN, 250 CYCLE, ALLOY STEEL NUT, CRES CAGE, 2 LUG	CURRENT DESIGN ACTIVITY: CAGE CODE: SALES DRAWING NO. FBL10082-()-()
REV. LETTER AND DATE B 2 MAR 09	DAF NUMBER DAF 87221	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES & ASME Y14.5M TOLERANCES:	ANGLES DECIMALS .XX = .02 .XXX = .010

PROJECT NUMBER: 90-003

S42056

SCANNED

TABLE 1

DASH NUMBER	THREAD <S>	A MAX	B MAX	C ±.005	D DIA REF	E MAX REF <10>	F MIN	G DIA MIN REF
-3-1	.1900-32 UNJF-3B	.948	.454	.344	.194	.250	.100	.250
-3-2						.312		
-3-3						.375		
-3-4						.438		
-3-5						.500		
-3-6						.562		
-4-1	.2500-28 UNJF-3B	1.292	.554	.500	.254	.295	.125	.310
-4-2						.357		
-4-3						.419		
-4-4						.481		
-4-5						.543		
-4-6						.605		
-5-1	.3125-24 UNJF-3B	1.292	.650	.500	.317	.344	.125	.373
-5-2						.400		
-5-3						.461		
-5-4						.524		
-5-5						.586		
-5-6						.649		

TABLE 1 CON'T

DASH NUMBER	THREAD <S>	H MAX	J ±.002	K DIA ±.005 - .000	L C'BORE MIN REF	V ±.005	MAX WEIGHT LBS/100
-3-1	.1900-32 UNJF-3B	.484	.688	.098	.070	.032	.67
-3-2					.125		.74
-3-3					.188		.79
-3-4					.250		.84
-3-5					.313		.89
-3-6					.375		.94
-4-1	.2500-28 UNJF-3B	.584	1.000	.098	.070	.032	1.17
-4-2					.125		1.27
-4-3					.188		1.36
-4-4					.250		1.44
-4-5					.313		1.54
-4-6					.375		1.62
-5-1	.3125-24 UNJF-3B	.720	1.000	.130	.070	.040	1.92
-5-2					.125		1.97
-5-3					.188		2.10
-5-4					.250		2.21
-5-5					.313		2.32
-5-6					.375		2.43

INTERIM DOCUMENT REVISION		
Rev.	Date	DAF #
B1	10/21/10	94301

APPROVED DATE 17 JUL 89	CURRENT DESIGN ACTIVITY: Alcoa Fastening Systems 	TITLE: NUT PLATE FLAT BEAM LOCK, CLIP-IN, 250 CYCLE, ALLOY STEEL NUT, CRES CAGE, 2 LUG	CURRENT DESIGN ACTIVITY: CAGE CODE: SALES DRAWING NO. FBL10082-()-()
REV. LETTER AND DATE B 2 MAR 89	VOI-SHAN PRODUCTS 3000 W. LOMITA BLVD. TORRANCE, CA 90606	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES & ASME Y14.6M TOLERANCES:	ANGLES = ± .3° DECIMALS .XX = ± .02 .XXX = ± .010
DAF NUMBER DAF 87221			SHEET 2 OF 3

PROJECT NUMBER: 90-003

MANUFACTURE OF THE PROPRIETARY PARTS SHOWN HERE WITHOUT WRITTEN CONSENT OF ALCOA FASTENING SYSTEMS IS ABSOLUTELY PROHIBITED.

THIS DRAWING EMBODIES A CONFIDENTIAL, PROPRIETARY DESIGN & ALL DESIGN, MANUFACTURING PRODUCTION, USE & SALE RIGHTS REGARDING SAME ARE EXPRESSLY RESERVED.

S22056

SCANNED

TABLE 2

PART NUMBER	SEATING TORQUE (MAX)	INSTALLATION OR REMOVAL TORQUE (MAXIMUM)	BREAKAWAY TORQUE (MINIMUM)	AXIAL TENSILE STRENGTH (POUNDS MIN)	PUSHOUT STRENGTH (LBS.MINIMUM)	TORQUE-OUT STRENGTH (IN/LBS MINIMUM)
FBL10082-3- ()	36.0 IN/LBS	18.0 IN/LBS	2.0 IN/LBS	2,825	200	90
FBL10082-4- ()	60.0 IN/LBS	30.0 IN/LBS	3.5 IN/LBS	5,060	225	160
FBL10082-5- ()	120.0 IN/LBS	60.0 IN/LBS	6.5 IN/LBS	7,000	250	280

NOTES; UNLESS OTHERWISE SPECIFIED:

2. MATERIAL:

2.1 NUT: 4140 OR 8740 ALLOY STEEL PER AMS6382 OR AMS6322.

2.2 CAGE: A286 CRES STEEL PER AMS5525.

2.3 CLIP: 302 CRES STEEL PER AMS5688 OR 18-2MN CRES, OR XM-28 PER CHEMISTRY OF ASTM A313.

3. HEAT TREAT:

3.1 NUT: 180 KSI MINIMUM ULTIMATE TENSILE STRENGTH PER AMS2759.

3.2 CAGE: 140 KSI MINIMUM ULTIMATE TENSILE STRENGTH PER AMS2759.

4. FINISH:

4.1 NUT: CADMIUM PLATE PER AMS-QQ-P-416, TYPE I, CLASS 2, WITH 23 HOURS BAKE TO RELIEVE HYDROGEN EMBRITTLEMENT, AND DRY FILM LUBE PER AS5272.

4.2 CAGE: PASSIVATE PER AMS2700.

4.3 CLIP: PASSIVATE PER AMS2700.

<5> THREADS PER ASBB79 EXCEPT IN LOCKING AREA AND PRIOR TO LUBRICATION.

6. ANTI-SEIZE COMPOUND PER MIL-PRF-907 APPLIED TO INTERNAL THREADS.

7. FLOAT OF NUT PORTION OF ASSEMBLY SHALL BE .030 MINIMUM RADially FROM CENTERED POSITION. NUT BODY SHALL BE CAPABLE OF ENGAGEMENT WITH A BOLT IN THE MAXIMUM MISALIGNED POSITION.

8. PUSHOUT, TORQUE-OUT AND AXIAL TENSILE STRENGTH OF NUT PLATE SHALL BE AS SPECIFIED IN TABLE 2.

9. LOCKING TORQUE:

9.1 THE SELF LOCKING FEATURE SHALL BE A FLAT BEAM TYPE CAPABLE OF 250 SEATED USABLE CYCLES WHEN TESTED WITH A 160 KSI MINIMUM ULTIMATE TENSILE STRENGTH A286 CRES STEEL BOLT. LOCKING TORQUE LIMITS SHALL BE AS SPECIFIED IN TABLE 2.

<10> MINIMUM "E" NOT SPECIFIED, LIMITED ONLY BY STRENGTH REQUIREMENTS.

11. THE ASSEMBLY SHALL PROVIDE A BEARING SURFACE FOR THE NUT WITHIN THE CAGE.

12. SHAPE WITHIN ENVELOPE SHOWN OPTIONAL AND AT MANUFACTURERS OPTION.

13. NUT PLATES ARE SIMILAR TO THE DIMENSIONAL ENVELOPE SPECIFIED IN NAS1792.

<14> CAGE SHALL BE IDENTIFIED WITH MANUFACTURER'S IDENTIFICATION AND THE LETTER "C" TO DESIGNATES CRES CAGE MATERIAL, RAISED OR DEPRESSED .010 MAXIMUM. LOCATION OPTIONAL EXCEPT SHALL BE VISIBLE AFTER ASSEMBLY.

<15> TOP OF NUT FLANGE SHALL BE IDENTIFIED WITH MANUFACTURERS IDENTIFICATION AND SECOND DASH NUMBER OF ASSEMBLY TO INDICATE "L" COUNTERBORE DEPTH. MARKING SHALL BE RAISED OR DEPRESSED .010 MAXIMUM. LOCATION OPTIONAL.

16. NUT ELEMENT IS REMOVABLE AND REPLACEABLE, SEE BELOW FOR PART NUMBERS:

ASSEMBLY PART NUMBER	NUT ELEMENT PART NUMBER	RETAINING CLIP PART NUMBER
FBL10082-3- ()	FBL10041-3- ()	FBL10059-3R
FBL10082-4- ()	FBL10041-4- ()	FBL10059-4R
FBL10082-5- ()	FBL10041-5- ()	FBL10059-5R

17. PART CALLOUT EXAMPLE:

17.1 FBL10082-4-2

SECOND DASH NUMBER INDICATES
"L" COUNTERBORE DEPTH (.125 SHOWN)

FIRST DASH NUMBER INDICATES BASIC
SIZE IN SIXTEENTHS OF AN INCH
(.2500-28UNJF SHOWN)

FINISH VARIATION - ADD "C" FOR CADMIUM PLATE PARTS

BASIC PART NUMBER

INTERIM DOCUMENT REVISION		
Rev	Date	DAF #
B1	10/21/10	94301

APPROVED DATE

17 JUL 89

REV. LETTER AND DATE

B 2 MAR 09

DAF NUMBER

DAF 87221

CURRENT DESIGN ACTIVITY:

Alcoa
Fastening
Systems



VOI-SHAN PRODUCTS
3000 W. LOMITA BLVD.
TORRANCE, CA 90505

TITLE:

NUT PLATE
FLAT BEAM LOCK, CLIP-IN,
250 CYCLE, ALLOY STEEL NUT,
CRES CAGE, 2 LUG

CURRENT DESIGN ACTIVITY:

CAGE CODE:

SALES DRAWING NO.

FBL10082- ()- ()

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES &
ASME Y14.5M TOLERANCES:

ANGLES = ± 3°
DECIMALS .XX = ± .02
.XXX = ± .010

SHEET 3 OF 3

PROJECT NUMBER: 90-003

MANUFACTURE OF THE PROPRIETARY PARTS SHOWN HERE WITHOUT WRITTEN
CONSENT OF ALCOA FASTENING SYSTEMS IS ABSOLUTELY PROHIBITED.

THIS DRAWING EMBODIES A CONFIDENTIAL PROPRIETARY DESIGN & ALL DESIGN, MANUFACTURING
PRODUCTION, USE & SALE RIGHTS REGARDING SAME ARE EXPRESSLY RESERVED.

S42056

SCANNED